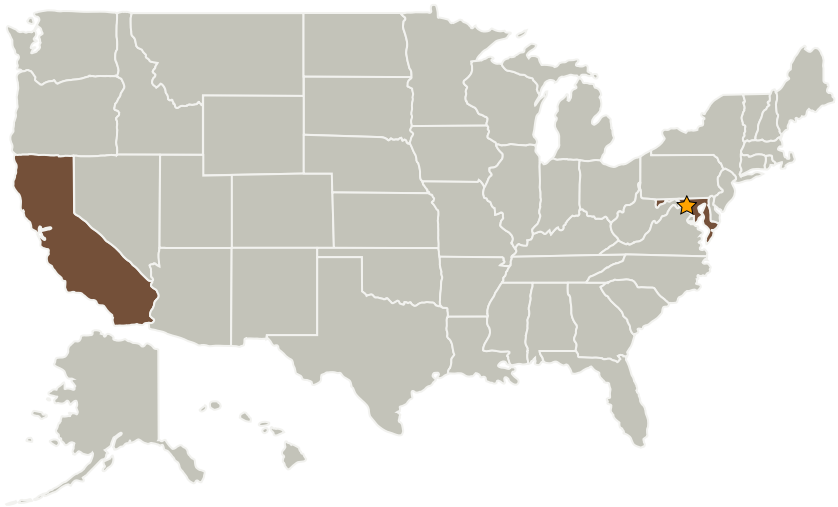
Very-High Efficiency, High Power Laser Diodes, Phase I

Completed Technology Project (2004 - 2005)

Project Introduction

AdTech Photonics, in collaboration with the Center for Advanced Studies in Photonics Research (CASPR) at UMBC, is pleased to submit this proposal entitled ?Very-High Efficiency, High Power Laser Diodes? in response to NASA?s needs in the such areas as diode pumped solid state lasers and Lidar Remote Sensing. Our goal is to develop ultra-high efficiency diode laser bars that can achieve greater than 80% external quantum efficiency, even when operated at very high power, in order to enable various NASA applications. To demonstrate the feasibility of manufacturing the laser diodes, we propose important milestones that include: a. innovative laser structures to incorporate well-designed band alignment to reduce over-flow leakage current. b. Designing, fabricating, packaging, and testing of thin film double-side heat removal designs that reduce the laser operating temperature and heating induced losses. c. Developing mass production on-wafer processing and packaging techniques that allow thin film lasers to be processed and separated into discrete laser bars. AdTech Photonics has many years of production experience in the high power laser area covering both military and commercial market needs since 1995. We will work out all tasks and provide NASA with small quantity fabricated samples for space qualification, and other NASA applications.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Goddard Space Flight Center (GSFC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Goddard Space Flight Center(GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland
AdTech Photonics, Inc.	Supporting Organization	Industry	California

Primary U.S. Work Locations	
California	Maryland

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.1 Remote Sensing Instruments/Sensors
    - TX08.1.5 Lasers